

References

- [Abacioglu et al.(1994)] Y. H. Abacioglu, T. R. Fouts, J. D. Laman, E. Claassen, S. H. Pincus, J. P. Moore, C. A. Roby, R. Kamin-Lewis, & G. K. Lewis. Epitope mapping and topology of baculovirus-expressed HIV-1 gp160 determined with a panel of murine monoclonal antibodies. *AIDS Res. Hum. Retroviruses* **10**:371–381, 1994.
NOTE: Medline: 94347461 Thirty MAbs were obtained from BALB/c mice immunized with rgp160 LAI expressed in baculovirus. These antibodies map to 4 domains: gp120 C1, C2, C3/V4, and the cytoplasmic tail of gp41. All epitopes were exposed on rgp160 without denaturing the protein, but 6/8 epitopes mapped in gp120 are not exposed unless the protein is denatured, showing rgp160 and gp120 fold differently.
- [Akerblom et al.(1990)] L. Akerblom, J. Hinkula, P. Broliden, B. Makitalo, T. Fridberger, J. Rosen, M. Villacres-Eriksson, B. Morein, & B. Wahren. Neutralizing cross-reactive and non-neutralizing monoclonal antibodies to HIV-1 gp120. *AIDS* **4**:953–960, 1990.
- [Barbas III et al.(1993)] C. F. Barbas III, T. A. Collet, P. Roben, J. Binley, W. Amberg, D. Hoekstra, D. Cabana, T. M. Jones, R. A. Williamson, G. R. Pilkington, N. L. Haigwood, A. C. Satterthwait, I. Sanz, & D. R. Burton. Molecular profile of an antibody response to HIV-1 as probed by combinatorial libraries. *J Mol Biol* **230**:812–823, 1993.
- [Beretta et al.(1987)] A. Beretta, F. Grassi, M. Pelagi, A. Clivio, C. Parravicini, G. Giovinazzo, F. Andronico, L. Lopalco, P. Verani, S. Butto, F. Titti, G. B. Rossi, G. Viale, E. Ginelli, & A. G. Siccardi. Hiv env glycoprotein shares a cross-reacting epitope with a surface protein present on activated human monocytes and involved in antigen presentation. *Eur. J. Immunol.* **17**:1793–1798, 1987.
- [Bolmstedt et al.(1990)] A. Bolmstedt, S. Olofsson, E. Sjogren-Jansson, I. Sjoblom, L. Akerblom, J. S. Hansen, & S. Hu. Carbohydrate determinant NeuAc-Gal β (1-4) of N-linked glycans modulates the antigenic activity of human immunodeficiency virus type 1 glycoprotein gp120. *J. Gen. Virol.* **73**:3009–3105, 1990.
- [Bou-Habib et al.(1994)] D. C. Bou-Habib, G. Roderiquez, T. Oravec, P. W. Berman, P. Lusso, & M. A. Norcross. Cryptic nature of envelope V3 region epitopes protects primary monocytotropic human immunodeficiency virus type 1 from antibody neutralization. *J. Virol.* **68**:6006–6013, 1994.
NOTE: Medline: 94335117 This paper shows that antibodies to the tip of the V3 loop fail to neutralize primary isolate JR-CSF, and that the V3 loop is far more accessible on the JR-CSF derived T-cell tropic strain T-CSF. Anti-V3 antibodies successfully neutralize T-CSF. Weak binding of anti-V3 antibodies to the primary isolate JR-CSF suggests the V3 loop is accessible only in a minor fraction of proteins.

HIV Peptide-Reactive Monoclonal Antibodies

- [Broliden et al.(1990)] P. A. Broliden, K. Ljunggren, J. Hinkula, E. Norrby, L. Akerblom, & B. Wahren. A monoclonal antibody to human immunodeficiency virus type 1 which mediates cellular cytotoxicity and neutralization. *J. Virol.* **64**:936–940, 1990.
NOTE: Medline: 90112670.
- [Broliden et al.(1991)] P. A. Broliden, B. Makitalo, L. Akerblom, J. Rosen, K. Broliden, G. Utter, M. Jondal, E. Norrby, & B. Wahren. Identification of amino acids in the V3 region of gp120 critical for virus neutralization by human HIV-1 specific antibodies. *Immunology* **73**:371–376, 1991.
- [Buchacher et al.(1994)] A. Buchacher, R. Predl, K. Strutzenberger, W. Steinfellner, A. Trkola, M. Purtscher, G. Gruber, C. Tauer, F. Steindl, A. Jungbauer, & H. Katinger. Generation of human monoclonal antibodies against HIV-1 proteins; electrofusion and Epstein-Barr virus transformation for peripheral blood lymphocyte immortalization. *AIDS Res. and Hum. Retroviruses* **10**:359–369, 1994.
NOTE: Medline: 94347460 A panel of 33 human monoclonal antibodies were produced. Linear epitopes for some of this set of MAbs were mapped using peptide ELISA. Linear epitopes were mapped in gp41, and a single epitope was mapped in p24. While multiple gp120 specific MAbs were generated, all seemed to be conformational or carbohydrate dependent, or both.
- [Buchacher et al.(1992)] A. Buchacher, R. Predl, C. Tauer, M. Purtscher, G. Gruber, R. Heider, F. Steindl, A. Trkola, A. Jungbauer, & H. Katinger. Human monoclonal antibodies against gp41 and gp120 as potential agents for passive immunization. *Vaccines* **92**:191–195, 1992.
- [Cavacini et al.(1993)] L. A. Cavacini, C. L. Emes, J. Power, A. Buchbinder, S. Zolla-Pazner, & M. R. Posner. Human monoclonal antibodies to the V3 loop of HIV-1 gp120 mediate variable and distinct effects on binding and viral neutralization by a human monoclonal antibody to the CD4 binding site. *J. AIDS* **6**:353–358, 1993.
NOTE: Medline: 93204013.
- [Chin et al.(1995)] L.-T. Chin, A.-C. Malmborg, K. Kristensson, J. Hinkula, B. Wahren, & C. A. K. Borrebaeck. Mimicking the humoral immune response in vitro results in antigen-specific isotype switching supported by specific autologous T helper cells: generation of human HIV-1-neutralizing IgG monoclonal antibodies from naive donors. *Eur. J. Immunol.* **25**:657–663, 1995.
NOTE: Medline: 95220411.
- [Conley et al.(1994)] A. J. Conley, M. K. Gorny, J. A. Kessler II, L. J. Boots, M. Ossorio-Castro, S. Koenig, D. W. Lineberger, E. A. Emini, C. Williams, & S. Zolla-Pazner. Neutralization of primary human immunodeficiency virus type 1 isolates by the broadly reactive anti-V3 monoclonal antibody 447-52D. *J. Virol.* **68**:6994–7000, 1994.
NOTE: Medline: 95018607.
- [Cordell et al.(1991)] J. Cordell, J. P. Moore, C. J. Dean, P. J. Klasse, R. A. Weiss, & J. A. McKeating. Rat monoclonal antibodies to nonoverlapping epitopes of human immunodeficiency virus type I gp120 block CD4 binding in vitro. *Virology* **185**:72–79, 1991.

HIV Peptide-Reactive Monoclonal Antibodies

- [Croix et al.(1993)] D. A. Croix, H. Y. Yeh, J. Sedlacek, R. B. Luftig, & P. D. Gottlieb. A dominant epitope of HIV-1 protease recognized by hamster monoclonal antibodies. *J. Acq. Immune Def. Synd.* **6**:558–566, 1993.
NOTE: Medline: 93267390.
- [DeSantis et al.(1994)] C. DeSantis, L. Lopalco, P. Robbioni, R. Longhi, G. Rappocciolo, A. G. Siccardi, & A. Beretta. Human antibodies to immunodominant c5 region of hiv-1 gp120 cross-react with hla class i on activated cells. *AIDS Res. and Hum. Ret.* **10**:157–162, 1994.
- [DeVico et al.(1991)] A. L. DeVico, T. D. Copeland, Oroszlan, R. C. Gallo, & M. G. Sarngadharan. Interaction of C-terminal sequences of human immunodeficiency virus reverse transcriptase with template primer. *J Biol Chem* **266**:6774–6779, 1991.
- [di Marzo Veronese et al.(1992)] F. di Marzo Veronese, R. Rahman, R. Pal, C. Boyer, J. Romano, V. S. Kalyanaraman, B. C. Nair, R. C. Gallo, & M. G. Sarngadharan. Delineation of immunoreactive, conserved regions in the external envelope glycoprotein of the human immunodeficiency virus type 1. *AIDS Res. Hum. Retroviruses* **8**:1125–1132, 1992.
- [di Marzo Veronese et al.(1993)] F. di Marzo Veronese, M. S. Reitz, Jr., G. Gupta, M. Robert-Guroff, C. Boyer-Thompson, A. Louie, R. C. Gallo, & P. Lusso. Loss of a neutralizing epitope by a spontaneous point mutation in the V3 loop of HIV-1 isolated from an infected laboratory worker. *J. Biol. Chem.* **268**:25894–25901, 1993.
NOTE: Medline: 94064668. The Ab M77 cannot neutralize a virus isolated from a IIIB infected lab-worker that has a single point mutation in the defined linear epitope. M77 cannot bind to the mutant native gp120, but can bind to a peptide that carries the substitution.
- [Dowbenko et al.(1988)] D. Dowbenko, G. Nakamura, C. Fennie, C. Shimasaki, L. Riddle, R. Harris, T. Gregory, & L. Lasky. Epitope mapping of the immunodeficiency virus type 1 gp120 with monoclonal antibodies. *J. Virol.* **62**:4703–4711, 1988.
- [D'Souza et al.(1994)] M. P. D'Souza, S. J. Geyer, C. V. Hanson, R. M. Hendry, G. Milman, & C. Investigators. Evaluation of monoclonal antibodies to HIV-1 envelope by neutralization and binding assays: an international collaboration. *AIDS* **8**:169–181, 1994.
NOTE: Medline: 94318200.
- [Duarte et al.(1994)] C. A. Duarte, M. Montero, A. Seralena, R. Valdes, V. Jimenez, J. Benitez, E. Narciandi, J. Madrazo, G. Padron, G. Sanchez, G. Gilljan, K. Persson, S. Ojeda, A. Caballero, A. Miranda, M. C. Dominguez, B. Wahren, & A. Menendez. Multiepitope polypeptide of the HIV-1 envelope induces neutralizing monoclonal antibodies against V3 loop. *AIDS Res. and Hum. Retroviruses* **10**:235–243, 1994.
NOTE: Medline: 94289061.
- [Durda et al.(1990)] P. J. Durda, L. Bacheler, P. Clapman, A. M. Jenoski, B. Leece, T. J. Matthews, A. McKnight, R. Pomerantz, M. Rayner, & K. J. Weinhold. HIV-1 neutralizing monoclonal antibodies induced by a synthetic peptide. *AIDS Res and Hum Retroviruses* **6**:1115, 1990.

HIV Peptide-Reactive Monoclonal Antibodies

- [Durda et al.(1988)] P. J. Durda, B. Leece, A. M. Jenoski, H. Rabin, A. Fisher, R. Gallo, & F. Wong-Staal. Characterization of murine monoclonal antibodies to HIV-1 induced by synthetic peptides. *AIDS Res and Hum Retroviruses* **4**:331–342, 1988.
- [Emini et al.(1992)] E. A. Emini, W. A. Schleif, J. H. Nunberg, A. J. Conley, Y. Eda, S. Tokiyoshi, S. D. Putney, S. Matsushita, K. E. Cobb, C. M. Jett, J. W. Eichberg, & K. K. Murthy. Prevention of HIV-1 infection in chimpanzees by gp120 V3 domain-specific monoclonal antibody. *Nature* **355**:728–730, 1992.
NOTE: Medline: 92158079.
- [Evans et al.(1989)] D. J. Evans, J. McKeating, J. M. Meredith, K. L. Burke, K. Katrak, A. John, M. Ferguson, P. D. Minor, R. A. Weiss, & J. W. Almond. An engineered poliovirus chimera elicits broadly reactive HIV-1 neutralizing antibodies. *Nature* **339**:385–388, 1989.
NOTE: Medline: 89262052.
- [Ferns et al.(1991)] R. B. Ferns, J. C. Partridge, M. Tisdale, N. Hunt, & R. S. Tedder. Monoclonal antibodies define linear and conformational epitopes of HIV-1 pol gene products. *AIDS Res. Human Retroviruses* **7**:307–313, 1991.
NOTE: Medline: 91291501. 21 anti-RT MAbs were raised and characterized – three narrowly defined linear epitopes were mapped.
- [Fujii et al.(1993)] Y. Fujii, Y. Nishino, T. Nakaya, K. Tokunaga, & K. Ikuta. Expression of human immunodeficiency virus type 1 Nef antigen on the surface of acutely and persistently infected human T-cells. *Vaccine* **11**:1240, 1993.
- [Fung et al.(1992)] M. S. C. Fung, C. R. Y. Sun, W. L. Gordon, R. Liou, T. W. Chang, W. N. C. Sun, E. S. Daar, & D. D. Ho. Identification and characterization of a neutralization site within the second variable region of human immunodeficiency virus type 1 gp120. *J. Virol.* **66**:848–856, 1992.
NOTE: Medline: 92114188 Two anti-envelope V2 antibodies were raised that neutralize virus in either a conformation dependent (G3-136) and conformation independent (BAT085) manner. G3-136 has diminished reactivity with deglycosylation or DTT reduced gp120, and sCD4 inhibits binding in a competition assay; BAT085 is not sensitive to these alterations in gp120.
- [Fung et al.(1990)] M. S. C. Fung, C. R. Y. Sun, R. S. Liou, W. Gordon, N. T. Chang, T.-W. Chang, & N.-C. Sun. Monoclonal anti-idiotypic antibody mimicking the principal neutralization site in HIV-1 gp120 induces HIV-1 neutralizing antibodies in rabbits. *J. Immunol.* **145**:2199–2206, 1990.
NOTE: Medline: 90375916.
- [Gorny et al.(1992)] M. K. Gorny, A. J. Conley, S. Karwowska, A. Buchbinder, J.-Y. Xu, E. A. Emini, S. Koenig, & S. Zolla-Pazner. Neutralization of diverse human immunodeficiency virus type 1 variants by an anti-V3 human monoclonal antibody. *J. Virol.* **66**:7538–7542, 1992.
NOTE: Medline: 93059712.

HIV Peptide-Reactive Monoclonal Antibodies

- [Gorny et al.(1989)] M. K. Gorny, V. Gianakakos, S. Sharpe, & S. Zolla-Pazner. Generation of human monoclonal antibodies to human immunodeficiency virus. *Proc. Natl. Acad. Sci. USA* **86**:1624–1628, 1989.
NOTE: Medline: 89160828.
- [Gorny et al.(1993)] M. K. Gorny, J. Xu, S. Karwowska, A. Buchbinder, & S. Zolla-Pazner. Repertoire of neutralizing human monoclonal antibodies specific for the V3 domain of HIV-1 gp120. *J. Immunol.* **150**:635–643, 1993.
NOTE: Medline: 93123766. Characterization of 12 human MABs that bind and neutralize the MN isolate with 50% neutralization. Two of these antibodies also bound and neutralized IIIB: 447-52-D and 694/98-D; all others could not bind HXB2 peptides. All but two, 418-D and 412-D could bind to SF2 peptides.
- [Gorny et al.(1991)] M. K. Gorny, J.-Y. Xu, V. Gianakakos, S. Karwowska, C. Williams, H. W. Sheppard, C. V. Hanson, & S. Zolla-Pazner. Production of site-selected neutralizing human monoclonal antibodies against the third variable domain of the human immunodeficiency virus type 1 envelope glycoprotein. *Proc. Natl. Acad. Sci. USA* **88**:3238–3242, 1991.
NOTE: Medline: 91195328.
- [Grassi et al.(1991)] F. Grassi, R. Meneveri, M. Gullberg, L. Lopalco, G. B. Rossi, P. Lanza, C. DeSantis, G. Brattsand, S. Butto, E. Ginelli, A. Berretta, & A. G. Siccardi. Human immunodeficiency virus type 1 gp120 mimics a hidden monomorphic epitope borne by class I major histocompatibility complex heavy chains. *J. Exp. Med* **174**:53–62, 1991.
- [Grimison & Laurence(1995)] B. Grimison & J. Laurence. Immunodominant epitope regions of HIV-1 reverse transcriptase: correlations with HIV-1+ serum IgG inhibitory to polymerase activity and with disease progression. *J. Acq. Immune Def. Synd.* **9**:58–68, 1995.
NOTE: Medline: 95227740.
- [Grunow et al.(1990)] R. Grunow, R. Giess, T. Portsman, H. Dopel, K. Hansel, & R. von Baehr. Development and biological testing of human and murine antibodies against HIV antigens. *Z. Klin. Med.* **45**:367–369, 1990.
- [Haaheim et al.(1991)] L. R. Haaheim, J. P. Maskell, P. Mascagni, & A. R. M. Coates. Fine molecular specificity of linear and assembled antibody binding sites in HIV-1 p24. *Scand. J. Immunol.* **34**:341–350, 1991.
NOTE: Medline: 91352532 Seven murine MABs to a 104-mer peptide spanning residues 270-373 of p24 gag were generated.
- [Hinkula et al.(1990)] J. Hinkula, J. Rosen, V.-A. S. ad T. Stigbrand, & B. Wahren. Epitope mapping of the HIV-1 gag region with monoclonal antibodies. *Mol. Immunol.* **27**:395–403, 1990.
NOTE: Medline: 90309760. Localization of immunogenic domains in p24, p17, and p15. Only the linear epitopes with the best defined binding domains are included (≤ 15 amino acids), so only 9 out of the 17 MABs described in this paper are included here.

HIV Peptide-Reactive Monoclonal Antibodies

[Ho et al.(1991)] D. D. Ho, M. S. C. Fung, Y. Cao, X. L. Li, C. Sun, T. W. Chang, & N.-C. Sun. Another discontinuous epitope on glycoprotein gp120 that is important in human immunodeficiency virus type 1 neutralization is identified by a monoclonal antibody. *Proc. Natl. Acad. Sci. USA* **88**:8949–8952, 1991.

NOTE: Medline: 92020968.

[Janvier et al.(1990)] B. Janvier, P. Archinard, B. Mandrand, A. Goudeau, & F. Barin. Linear B-cell epitopes of the major core protein of human immunodeficiency virus types 1 and 2. *J Virol* **64**:4258–4263, 1990.

[Kang et al.(1994)] C.-Y. Kang, K. Hariharan, P. L. Nara, J. Sodroski, & J. P. Moore. Immunization with a soluble CD4-gp120 complex preferentially induces neutralizing anti-human immunodeficiency virus type 1 antibodies directed to conformation-dependent epitopes of gp120. *J. Virol.* **68**:5854–5862, 1994.

NOTE: Medline: 94335102. Most of the MAbs generated in this study were conformational, but there were four that bound a V3 loop peptide. These four could neutralize lab strains with different efficiencies. These MAbs were very sensitive to substitutions in the V3 loop, but also to substitutions in the base of the V1/V2 loop structure (120/121 VK/LE), indicating the conformational character of these epitopes.

[Karwowska et al.(1992)] S. Karwowska, M. K. Gorny, A. Buchbinder, V. Gianakakos, C. Williams, T. Fuerst, & S. Zolla-Pazner. Production of human monoclonal antibodies specific for conformational and linear non-V3 epitopes of gp120. *AIDS Res. Human Retroviruses* **8**:1099–1106, 1992.

NOTE: Medline: 92368727. A single linear MAb was generated, to the immunodominant domain in the C-terminal portion of gp120. This antibody did not inhibit rCD4-rgp120 binding or neutralize IIIB or MN. Three conformational epitope binding MAbs were also described in this paper that could neutralize IIIB and MN.

[Keller et al.(1993)] P. M. Keller, B. A. Arnold, A. R. Shaw, R. L. Tolman, F. Van Middlesworth, S. Bondy, V. K. Rusiecki, S. Koenig, S. Zolla-Pazner, P. Conard, E. A. Emini, & A. J. Conley. Identification of HIV vaccine candidate peptides by screening random phage epitope libraries. *Virology* **193**:709–716, 1993.

NOTE: Medline: 93212503. Library of 15 mers were screened for reactivity with 447-52D. 100s of 15 mers reacted, of which 70 were sequenced. All but one contained the motif GPXR.

[Kinney Thomas et al.(1988)] E. Kinney Thomas, J. N. Weber, J. McClure, P. R. Clapham, M. C. Singhal, M. K. Shriver, & R. A. Weiss. Neutralizing monoclonal antibodies to the aids virus. *AIDS* **2**:25–29, 1988.

NOTE: Medline: 88192838.

HIV Peptide-Reactive Monoclonal Antibodies

- [Kusk et al.(1992)] P. Kusk, T. H. Bugge, B. O. Lindhardt, E. F. Hulgaard, & K. Holmback. Mapping of linear B-cell epitopes on the major core protein p24 of human immunodeficiency virus type 1. *AIDS Res. Human Retroviruses* **8**:1789–1794, 1992.
NOTE: Medline: 93090461. The epitope for MAb F5-2 was found to be reactive with human sera from HIV-1 infected individuals, and reactivity to this epitope was associated with disease progression and low CD4 T-cell counts.
- [Kusk et al.(1988)] P. Kusk, K. Ulrich, J. Zeuthen, & G. Pallesen. Immunological characterization and detection of the major core protein p24 of the human immunodeficiency virus (HIV) using monoclonal antibodies. *J AIDS* **1**:326–332, 1988.
- [Kuttner et al.(1992)] G. Kuttner, E. Giessmann, B. Niemann, K. Winkler, R. Grunow, J. Hinkula, J. Rosen, B. Wahren, & R. von Baehr. Immunoglobulin V regions and epitope mapping of a murine monoclonal antibody against p24 core protein of HIV-1. *Mol. Immunol.* **29**:561–564, 1992.
NOTE: Medline: 92227956. The nucleotide sequence of the VDJ_H and VJ_L regions of a murine MAb (CB-mab-p24/13-5) against p24 was obtained.
- [Laal et al.(1994)] S. Laal, S. Burda, M. K. Gorny, S. Karwowska, A. Buchbinder, & S. Zolla-Pazner. Synergistic neutralization of human immunodeficiency virus type 1 by combinations of human monoclonal antibodies. *J. Virol.* **68**:4001–4008, 1994.
NOTE: Medline: 9424674 Antibodies to the C-terminal part of gp120 and the V3 loop were shown to act synergistically with anti-CD4 binding site MAbs in terms of neutralization. C-terminal antibodies did not synergize V3 loop MAb neutralization.
- [Laman et al.(1992)] J. D. Laman, M. M. Schellekens, Y. H. Abacioglu, G. K. Lewis, M. Tersmette, R. A. M. Fouchier, J. P. M. Langeduk, E. Claassen, & W. J. A. Boersma. Variant-specific monoclonal and group-specific polyclonal human immunodeficiency virus type 1 neutralizing antibodies raised with synthetic peptides from the gp120 third variable domain. *J. Virol.* **66**:1823–1831, 1992.
NOTE: Medline: 92333709.
- [Langedijk et al.(1992)] J. P. M. Langedijk, N. K. T. Back, E. Kinney-Thomas, C. Bruck, M. Francotte, J. Goudsmit, & R. H. Melen. Comparison and fine mapping of both high and low neutralizing monoclonal antibodies against the principal neutralization domain of HIV-1. *Arch. Virol.* **126**:129–146, 1992.
NOTE: Medline: 92398435.
- [Liou et al.(1989)] R. S. Liou, E. M. Rosen, M. S. C. Fung, W. N. C. Sun, C. Sun, W. Gordon, N. T. Chang, & T. W. Chang. A chimeric mouse-human antibody that retains specificity for HIV-1 gp120 and mediates the lysis of the HIV-1-infected cells. *J Immunol* **143**:3967–3975, 1989.

HIV Peptide-Reactive Monoclonal Antibodies

- [Lopalco et al.(1993)] L. Lopalco, R. Longhi, F. Ciccomascolo, A. De Rossi, M. Pelagi, F. Andronico, J. P. Moore, T. Schulz, A. Beretta, & A. G. Siccardi. Identification of human immunodeficiency virus type 1 glycoprotein gp120/gp41 interacting sites by the idiotypic mimicry of two monoclonal antibodies. *AIDS Res. Human Retroviruses* **9**:33–39, 1993.
NOTE: Medline: 93152284. The MAb M38 binds to the carboxy terminus of gp120, in a gp41 binding region. This MAb was used for to create an anti-idiotypic MAb, 9G5A, which can bind to gp41 at the base of the cysteine loop. The binding domains of these two monoclonals are consistent the the C5 domain of gp120 being able to bind to the gp41 cysteine loop. The MAb M38 also binds to human HLA molecules.
- [M. E. White-Scharf et al.(1993)] M. E. White-Scharf, B. J. Potts, L. M. Smith, K. A. Sokolowski, J. R. Rusche, & S. Silver. Broadly neutralizing monoclonal antibodies to the V3 region of HIV-1 can be elicited by peptide immunization. *Virology* **192**:197–206, 1993.
NOTE: Medline: 93297106 Using a V3 loop peptide as immunogen, a panel of 50 anti-V3 neutraling monoclonal antibodies were generated. Four of them were characterized in detail in this paper.
- [Mani et al.(1994)] J.-C. Mani, V. Marchi, & C. Cucurou. Effect of HIV-1 peptide presentation on the affinity constants of two monoclonal antibodies determined by BIAcoreTM technology. *Molecular Immunology* **31**:439–444, 1994.
NOTE: Medline: 94239428 Two MAbs are described; one 41-1 did not require the Cys-Cys disulfide bridge and loop formation, the other 9-11 depends on loop formation.
- [Matsuo et al.(1992)] K. Matsuo, Y. Nishino, T. Kimura, R. Yamaguchi, A. Yamazaki, T. Mikami, & K. Ikuta. Highly conserved epitope domain in major core protein p24 is structurally similar among human, simian and feline immunodeficiency viruses. *J. Gen. Virol.* **73**:2445–2450, 1992.
NOTE: Medline: 93019072 Two MAbs are described that bind to a highly conserved region in p24, with antigenic conservation between FIV, SIV and HIV-1. The authors suggest this might be an immunodominant domain.
- [Matsushita et al.(1988)] S. Matsushita, M. Rober-Guroff, J. Rusche, A. Koito, T. Hattori, H. Hoshino, K. Javaherian, K. Takatsuki, & S. Putney. Characterization of a human immunodeficientcy virus neutralizing monoclonal antibody and mapping the neutralizing epitope. *J. Virol.* **62**:2107–2114, 1988.
- [McKeating et al.(1993a)] J. A. McKeating, J. Bennett, S. Zolla-Pazner, M. Schutten, S. Ashelford, A. Leigh-Brown, & P. Balfe. Resistance of a human serum-selected human immunodeficiency virus type 1 escape mutant to neutralization by CD4 binding site monoclonal antibodies is conferred by a single amino acid change in gp120. *J. Virol.* **67**:5216–5225, 1993a.
NOTE: Medline: 93323237.
- [McKeating et al.(1992a)] J. A. McKeating, J. Cordell, C. J. Dean, & P. Balfe. Synergistic interaction between ligands binding to the CD4 binding site and V3 domain of human immunodeficiency virus type I gp120. *Virology* **191**:732–742, 1992a.

HIV Peptide-Reactive Monoclonal Antibodies

[McKeating et al.(1992b)] J. A. McKeating, J. P. Moore, M. Ferguson, H. S. Marsden, S. Graham, J. W. Almond, D. J. Evans, & R. A. Weiss. Monoclonal antibodies to the C4 region of human immunodeficiency virus type 1 gp120: use in topological analysis of a CD4 binding site. *AIDS Res. Human Retroviruses* **8**:451–459, 1992b.

NOTE: Medline: 92287630 Antibodies were generated using an antigen poliovirus chimera, expressing aa430-446 of gp120. Results suggest that WQEVGKAMYA may be exposed on the surface of rec gp120.

[McKeating et al.(1993b)] J. A. McKeating, C. Shotton, J. Cordell, S. Graham, P. Balfe, N. Sullivan, M. Charles, M. Page, A. Bolmstedt, S. Olofsson, S. C. Kayman, Z. Wu, A. Pinter, C. Dean, J. Sodroski, & R. A. Weiss. Characterization of neutralizing monoclonal antibodies to linear and conformation-dependent epitopes within the first and second variable domains of human immunodeficiency virus type 1 gp120. *J. Virol.* **67**:4932–4944, 1993b.

NOTE: Medline: 93323237. Substitutions in the V2 loop can result in complete dissociation of gp120 and gp41, suggesting alterations in V2 can affect subunit assembly. Other substitutions allowed gp120-gp41 association and expression, but inhibited viral entry or syncytia. Neutralizing monoclonal antibody G3-4 binding was altered by V2 substitutions.

[Moore et al.(1995a)] J. P. Moore, Y. Cao, L. Qing, Q. J. Sattentau, J. Pyati, R. Koduri, J. Robinson, C. F. B. III, D. R. Burton, & D. D. Ho. Primary isolates of human immunodeficiency virus type I are relatively resistant to neutralization by monoclonal antibodies to gp120, and their neutralization is not predicted by studies with monomeric gp120. *J. Virol.* **69**:101–109, 1995a.

[Moore et al.(1994a)] J. P. Moore, F. E. McCutchan, S.-W. Poon, J. Mascola, J. Liu, Y. Cao, & D. D. Ho. Exploration of antigenic variation in gp120 from clades A through F of human immunodeficiency virus type 1 by using monoclonal antibodies. *J. Virol.* **68**:8350–8364, 1994a.

NOTE: Medline: 95056067 Four of five anti-V3 MAbs were slightly cross-reactive within clade B, but not very reactive outside clade B. Two discontinuous CD4 binding site Mabs appear to be pan-reactive. Anti-V2 MAbs were only sporadically reactive inside and outside of clade B.

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[Moore et al.(1994b)] J. P. Moore, Q. J. Sattentau, R. Wyatt, & J. Sodroski. Probing the structure of the human immunodeficiency virus surface glycoprotein gp120 with a panel of monoclonal antibodies. *J. Virol.* **68**:469–484, 1994b.

NOTE: Medline: 94076440. This study compared a large number MABs that bind to linear epitopes of gp120, and compared binding affinities for: i) native and SDS-DDT denatured gp120, (clone BH10 of the LAI isolate expressed in CHO cells); ii) recombinant gp120 lacking the V1, V2, V3 loops; iii) a panel of 20 mer peptides; iv) a panel of gp120 mutants; and v) oligomeric versus monomeric gp120. The binding ratio of native versus denatured monomeric gp120 is included in the table in this database. These numbers should be considered with the following points in mind: a continuous epitope may be partially exposed on the surface; and a preparation of rgp120 is not homogeneous and contains fully folded, partly denatured, and some completely unfolded species, so the conformation of what is considered to be a native protein will not only reflect fully folded gp120. The authors suggest that a fivefold increase in the affinity for a MAB binding to denatured versus native gp120 indicates that the epitope is inaccessible in the native form. We also have included here information extracted from Moore et al.'s list of the gp120 mutations that reduced the binding of a particular MAB. In mapping of exposed regions of gp120, C2, C3, and C5 domain epitopes were found to bind preferentially to denatured gp120. V1, V2 and V3, part of C4, and the extreme carboxy terminus of C5 were exposed on the native monomer. In the oligomeric form of the molecule, only V2, V3 and part of C4 are well exposed as continuous epitopes.

[Moore et al.(1993a)] J. P. Moore, Q. J. Sattentau, H. Yoshiyama, M. Thali, M. Charles, N. Sullivan, S.-W. Poon, M. S. Fung, F. Traincard, M. Pinkus, G. Robey, J. E. Robinson, D. D. Ho, & J. Sodroski. Probing the structure of the V2 domain of human immunodeficiency virus type 1 surface glycoprotein gp120 with a panel of eight monoclonal antibodies: human immune response to the V1 and V2 domains. *J. Virol.* **67**:6136–6151, 1993a.

NOTE: Medline: 93381817.

[Moore et al.(1993b)] J. P. Moore, M. Thali, B. A. Jameson, F. Vignaux, G. K. Lewis, S.-W. Poon, M. S. Fung, P. J. Durda, L. Akerblom, B. Wahren, D. D. Ho, Q. J. Sattentau, & J. Sodroski. Immunochemical analysis of the gp120 surface glycoprotein of human immunodeficiency virus type 1: Probing the structure of the C4 and V4 domains and the interaction of the C4 domain with the V3 loop. *J. Virol.* **73**:4785–4796, 1993b.

NOTE: Medline: 93323221. General observations: C4 and V3 MABs are sensitive to the way the epitopes are presented, and this sensitivity cannot be correlated to peptide binding. Some V3-C4 domain interaction was indicated based on mutation and interference studies.

[Moore et al.(1995b)] J. P. Moore, A. Trokla, B. Korber, L. J. Boots, J. A. Kessler II, F. E. McCutchan, J. Mascola, D. D. Ho, J. Robinson, & A. J. Conley. A human monoclonal antibody to a complex epitope in the V3 region of gp120 of human immunodeficiency virus type 1 has broad reactivity within and outside clade B. *J. Virol.* **69**:122–130, 1995b.

NOTE: The epitope was defined as including amino acids on both sides of the loop of the V3 loop: -I—G—FY-T, where the G is the second G of the GPGR tip of the loop. This antibody bound well to gp120 molecules from clades A,B,C,E, and F, when the critical amino acids were present. Binding did not parallel neutralization however; 19b could produce a 50-fold reduction of infectivity in some primary B isolates, and in C clade isolates at low virus input concentrations, but not in isolates from all clades where binding could occur (A,E, and F).

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[Moore et al.(1994c)] J. P. Moore, R. L. Willey, G. K. Lewis, J. Robinson, & J. Sodroski. Immunological evidence for interactions between the first, second and fifth conserved domains of the gp120 surface glycoprotein of human immunodeficiency virus type 1. *J. Virol.* **68**:6836–6847, 1994c.

NOTE: Medline: 95018590. Mutation 267N/Q in C2 abnormally exposes the carboxy-terminal end gp120.

[Moore et al.(1994d)] J. P. Moore, R. L. Willey, G. K. Lewis, J. Robinson, & J. Sodroski. Immunological evidence for interactions between the first, second, and fifth conserved domains of the gp120 surface glycoprotein of human immunodeficiency virus type 1. *J. Virol.* **68**:6836–6847, 1994d.

NOTE: Medline: 95018590.

[Muster et al.(1995)] T. Muster, B. Ferko, A. Klima, M. Purtscher, A. Trokla, P. Schulz, A. Grassauer, O. G. Englehard, A. Garcia-Sastre, P. Palese, & H. Katinger. Mucosal model of immunization against human immunodeficiency virus type 1 with a chimeric influenza virus. *J. Virol.* **69**:6678–6686, 1995.

[Muster et al.(1994)] T. Muster, R. Guinea, A. Trokla, M. Purtscher, A. Klima, F. Steindl, P. Palese, & H. Katinger. Cross-neutralization activity against divergent human immunodeficiency virus type 1 isolates induced by the gp41 sequence ELDKWAS. *J. Virol.* **68**:4031–4034, 1994.

[Muster et al.(1993)] T. Muster, F. Steindl, M. Purtscher, A. Trkola, A. Klima, G. Himmler, F. Ruker, & H. Katinger. A conserved neutralizing epitope on gp41 of human immunodeficiency virus type 1. *J. Virol.* **67**:6642–6647, 1993.

NOTE: Medline: 94016848 Peptides containing the amino acid sequence LDKWAS or DKWASL showed reduced reactivity. The peptides LELDKW and KWASLW showed no significant reaction. These data suggest that the epitope of the MAb 2F5 comprises the amino acid sequence ELDKWA, with DKWA being the core sequence.

[Nakamura et al.(1992)] G. R. Nakamura, R. Byrn, K. Rosenthal, J. P. Porter, M. R. Hobbs, L. Riddle, D. J. Eastman, D. Dowbenko, T. Gregory, B. M. Fendly, & P. W. Berman. Monoclonal antibodies to the extracellular domain of HIV-1 IIIB gp160 that neutralize infectivity, block binding to CD4, and react with diverse isolates. *AIDS Res. Human Retroviruses* **8**:1875–1885, 1992.

NOTE: Medline: 93143997.

[Nakamura et al.(1993)] G. R. Nakamura, R. Byrn, D. M. Wilkes, J. A. Fox, M. R. Hobbs, R. Hastings, H. C. Wessling, M. A. Norcross, B. M. Fendly, & P. W. Berman. Strain specificity and binding affinity requirements of neutralizing monoclonal antibodies to the C4 domain of gp120 from human immunodeficiency virus type 1. *J. Virol.* **67**:6179–6191, 1993.

NOTE: Medline: 93381821 Multiple CD4 binding domain antibodies are described; only one has a linear peptide reactivity (13H8). A V3 loop binding antibody is also described (1026).

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- [Nara et al.(1990)] P. L. Nara, L. Smit, N. Dunlop, W. Hatch, M. Merges, D. Waters, J. Kelliher, R. C. Gallo, P. J. Fischinger, & J. Goudsmit. Emergence of viruses resistant to neutralization by V3-specific antibodies in experimental human immunodeficiency virus type 1 IIIB infection of chimpanzees. *J. Virol.* **64**:3779–3791, 1990.
NOTE: Medline: 90317876.
- [Neurath & Strick(1990)] A. R. Neurath & N. Strick. Confronting the hypervariability of an immunodominant epitope eliciting virus neutralizing antibodies from the envelope glycoprotein of the human immunodeficiency virus type 1. *Mol. Immunol.* **27**:539–549, 1990.
NOTE: Medline: 92017917.
- [Niedrig et al.(1992)] M. Niedrig, H.-P. Harthus, M. Broker, H. Bickhard, G. Pauli, H. R. Gelderblom, & B. Wahren. Inhibition of viral replication by monoclonal antibodies directed against human immunodeficiency virus gp120. *J. Gen. Virol.* **73**:2451–2455, 1992.
NOTE: Medline: 93019073.
- [Niedrig et al.(1991)] M. Niedrig, J. Hinkula, H. Harthus, M. Broker, L. Hopp, G. Pauli, & B. Wahren. Characterization of murine monoclonal antibodies directed against the core proteins of human immunodeficiency virus types 1 and 2. *J. Virol.* **65**:4529–4533, 1991.
NOTE: Medline: 91303716 Multiple anti-HIV p24 MAbs were generated using HIV-1 IIIB p24 or HIV-2 ROD p26 as immunogens. The epitopes for these MAbs were mapped, and the cross-reactivity between HIV-1 IIIB, HIV-2 ROD and SIV MAC antigens were compared using multiple antibody binding assays. While some of the antibodies raised were cross-reactive by some or all of the assays, (ELISA, WB, immunofluorescence, immunoprecipitation and alkaline phosphatase anti-alkaline phosphatase assay), the different assays often gave different results. Only the antibodies raised to HIV-1 IIIB p24 are included in this database.
- [Niedrig et al.(1989)] M. Niedrig, J. Hinkula, W. Weigelt, J. L'Age-Stehr, G. Pauli, J. Rosen, & B. Wahren. Epitope mapping of monoclonal antibodies against human immunodeficiency virus type 1 structural proteins by using peptides. *J. Virol.* **63**:3525–3528, 1989.
NOTE: Medline: 89311648 Multiple linear MAb epitopes were described in p24 and p17. Several MAbs were able to react with HIV-2 ROD and SIV MAC in an immunoblot assay, as well as with HIV-1.
- [Niedrig et al.(1988)] M. Niedrig, J.-P. Rabanus, J. L. Stehr, H. R. Gelderblom, & G. Pauli. Monoclonal antibodies directed against human immunodeficiency virus gag proteins with specificity for conserved epitopes in HIV-1, HIV-2 and simian immunodeficiency virus. *J. Gen. Virol.* **69**:2109–2114, 1988.
- [Ohlin et al.(1992)] M. Ohlin, J. Hinkula, P.-A. Broliden, R. Grunow, C. A. K. Borrebaeck, & B. Wahren. Human MoAbs produced from normal, HIV-1-negative donors and specific for glycoprotein gp120 of the HIV-1 envelope. *Clin. Exp. Immunol.* **89**:290–295, 1992.

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- [Ohno et al.(1991)] T. Ohno, M. Terada, Y. Yoneda, K. W. Shea, R. F. Chambers, D. M. Stroka, M. Nakamura, & D. W. Kufe. A broadly neutralizing monoclonal antibody that recognizes the V3 region of human immunodeficiency virus type 1 glycoprotein gp120. *Proc. Natl. Acad. Sci. USA* **88**:10726–10729, 1991.
NOTE: Medline: 92073360.
- [Orvell et al.(1991)] C. Orvell, T. Unge, R. Bhikhabhai, K. Backbro, U. Ruden, B. Strandberg, B. Wahren, & E. M. Fenyo. Immunological characterization of the human immunodeficiency virus type 1 reverse transcriptase protein by the use of monoclonal antibodies. *J Gen Virol* **72**:1913–1918, 1991.
- [Otake et al.(1994)] K. Otake, Y. Fujii, Y. Nishino, Q. Zhong, K. Fujinaga, M. Kameoka, K. Ohki, & K. Ikuta. The carboxyl-terminal region of HIV-1 nef protein is a cell surface domain that can interact with CD4+ T cells. *J. Immunol.* **153**:5826–5837, 1994.
NOTE: Medline: 95081631 This study shows that the C-terminal end of Nef is accessible to Abs. This domain could bind in a soluble form to CD4+, uninfected cells, and this interaction is inhibited in the presence of the C-terminal specific antibodies. Syncytium formation was reduced by these Abs or peptides. Ab's could stain IIIB/M10, but not MN/M10, infected cells, in a membrane immunofluorescence assay.
- [Papsidero et al.(1989)] L. D. Papsidero, M. Sheu, & F. W. Ruscetti. Human immunodeficiency virus type 1-neutralizing monoclonal antibodies which react with p17 core protein: characterization and epitope mapping. *J. Virol.* **63**:267–272, 1989.
NOTE: Medline: 89068840 Two Mabs with overlapping binding sites on p17 reduced the infectivity of free virus. A p24 monoclonal was not able to do this.
- [Pinter et al.(1993a)] A. Pinter, W. J. Honnen, M. E. Racho, & S. A. Tilley. A potent, neutralizing human monoclonal antibody against a unique epitope overlapping the CD4-binding site of HIV-1 gp120 that is broadly conserved across North American and African virus isolates. *AIDS Res. Human Retroviruses* **9**:985–996, 1993a.
NOTE: Medline: 94107600.
- [Pinter et al.(1993b)] A. Pinter, W. J. Honnen, & S. A. Tilley. Conformational changes affecting the V3 and CD4-binding domains of human immunodeficiency virus type 1 gp120 associated with env processing and with binding of ligands to these sites. *J. Virol.* **67**:5692–5697, 1993b.
NOTE: Medline: 93353654.
- [Pirofski et al.(1993)] L. Pirofski, E. K. Thomas, & M. D. Scharff. Variable region gene utilization and mutation in a group of neutralizing murine anti-human immunodeficiency virus type 1 principal neutralizing determinant antibodies. *AIDS Res Human Retroviruses* **9**:41–49, 1993.
NOTE: Medline: 93152285 Observed restricted subset of murine V heavy and light chain gene elements in a set of 5 antibodies that bind to the tip of the V3 loop.

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[Poumbourios et al.(1992)] P. Poumbourios, D. A. McPhee, & B. E. Kemp. Antibody epitopes sensitive to the state of human immunodeficiency virus type 1 gp41 oligomerization map to a putative alpha-helical region. *AIDS Res. Human Retrov.* **8**:2055–2062, 1992.

NOTE: Medline: 93152279.

[Purtscher et al.(1994)] M. Purtscher, A. Trkola, G. Gruber, A. Buchacher, R. Predl, F. Steindl, C. Tauer, R. Berger, N. Barrett, A. Jungbauer, & H. Katinger. A broadly neutralizing human monoclonal antibody against gp41 of human immunodeficiency virus type 1. *AIDS Research and Human Retroviruses* **10**:1651–1658, 1994.

NOTE: Medline: 95194731.

[Robert-Guroff et al.(1994)] M. Robert-Guroff, A. Louie, M. Myagkikh, F. Michaels, M. P. Kieny, M. E. White-Scharf, B. Potts, D. Grogg, & M. S. Reitz Jr. Alteration of V3 loop context within the envelope of human immunodeficiency virus type 1 enhances neutralization. *J. Virol.* **68**:3459–3466, 1994.

NOTE: Medline: 94246688 MN-V3 loop inserted into a HBX2 background results in enhanced neutralization of anti-MN V3 MAb 50.1 and human HIV+ sera when the chimeric virus was compared MN. Enhanced affinity, and greater proportions of labeled infected H9 cells by FACS analysis, were also observed using two anti-MN V3 MAbs, 50.1 and 83.1.

[Robert-Hebmann et al.(1992a)] V. Robert-Hebmann, S. Emiliani, F. Jean, M. Resnicoff, & C. Devaux. Clonal analysis of murine B-cell response to the human immunodeficiency virus type 1 (HIV-1)-gag p17 and p25 antigens. *Mol. Immunol.* **29**:729–738, 1992a.

[Robert-Hebmann et al.(1992b)] V. Robert-Hebmann, S. Emiliani, M. Resnicoff, F. Jean, & C. Devaux. Subtyping of human immunodeficiency virus isolates with a panel of monoclonal antibodies: identification of conserved and divergent epitopes on p17 and p25 core proteins. *Mol. Immunol.* **29**:1175–1183, 1992b.

NOTE: Medline: 92408665.

[Safrin et al.(1993)] J. T. Safrin, M. S. C. Fung, C. A. Andrews, D. G. Braun, W. N. C. Sun, T. W. Chang, & R. A. Koup. hu-PBL-SCID mice can be protected from HIV-1 infection by passive transfer of monoclonal antibody to the principal neutralizing determinant of envelope gp120. *AIDS* **7**:15–21, 1993.

NOTE: Medline: 93183427.

[Sattentau et al.(1993)] Q. J. Sattentau, J. P. Moore, F. Vignaux, F. Traincard, & P. Poignard. Conformational changes induced in the envelope glycoproteins of the human and simian immunodeficiency viruses by soluble receptor binding. *J Virol* **67**:7383–7393, 1993.

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[Sattentau et al.(1995)] Q. J. Sattentau, S. Zolla-Pazner, & P. Poignard. Epitope exposure on functional, oligomeric HIV-1 gp41 molecules. *Virology* **206**:713–717, 1995.

NOTE: Most gp41 epitopes are masked when associated with gp120 on the cell surface. Weak binding of anti-gp41 MAbs can be enhanced by treatment with sCD4.

[Schneider et al.(1991)] T. Schneider, H. Harthus, P. Heldebrandt, M. Niedrig, M. Broker, W. Weigelt, A. Beck, & G. Pauli. Epitopes of the HIV-1-negative factor reactive with murine monoclonal antibodies and human HIV-1-positive sera. *AIDS Res. Human Retroviruses* **7**:37–43, 1991.

NOTE: Medline: 91197564. Epitopes for 9 murine MAbs were mapped, and found to be located in 4 immunogenic regions. 7/10 sera from HIV-1 positive individuals reacted to the four nef immunogenic regions.

[Scott Jr et al.(1990)] C. F. Scott Jr, S. Silver, A. T. Profy, S. D. Putney, A. Langlois, K. Weinhold, & J. E. Robinson. Human monoclonal antibody that recognizes the V3 region of human immunodeficiency virus gp120 and neutralizes the human T-lymphotropic virus type IIIMN strain. *Proc. Natl. Acad. Sci. USA* **87**:8597–8601, 1990.

NOTE: Medline: 91046042.

[Shang et al.(1991)] F. Shang, H. Huang, K. Revesz, H.-C. Chen, R. Herz, & A. Pinter. Characterization of monoclonal antibodies against the human immunodeficiency virus matrix protein, p17gag: identification of epitopes exposed at the surfaces of infected cells. *J. Virol.* **65**:4798–4804, 1991.

NOTE: Medline: 91333022. Six MAbs with linear epitopes were mapped. These Abs could only bind to HIV-infected cells that had been permeabilized with acetone. Only G11g1 and G11h3, two antibodies that did not bind to peptides, but only to intact p17, could react with live HIV-1 infected cells. These antibodies were not neutralizing.

[Shotton et al.(1995)] C. Shotton, C. Arnold, Q. Sattentau, J. Sodroski, & J. A. McKeating. Identification and characterization of monoclonal antibodies specific for polymorphic antigenic determinants within the V2 region of the human immunodeficiency virus type 1 envelope glycoprotein. *J. Virol.* **69**:222–230, 1995.

NOTE: Medline: 95074868. Anti-V2 linear and conformation dependent MAbs were studied. All V2 Abs studied could bind IIIB, but failed to neutralize non-clonal stocks. Epitope exposure is different in rgp120 compared to native gp120.

[Skinner et al.(1988)] M. A. Skinner, R. Ting, A. J. Langlois, K. J. Weinhold, H. K. Lyster, K. Javaherian, & T. J. Matthews. Characteristics of a neutralizing monoclonal antibody to the HIV envelope glycoprotein. *AIDS Res. Hum. Retroviruses* **4**:187–197, 1988.

NOTE: Medline: 88281280.

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- [Sullivan et al.(1993)] N. Sullivan, M. Thali, C. Furman, D. Ho, & J. Sodroski. Effect of amino acid changes in the v2 region of the human immunodeficiency virus type 1 gp120 glycoprotein on subunit association, syncytium formation, and recognition by a neutralizing antibody. *J. Virol.* **67**:3674–3679, 1993.
NOTE: Medline: 93267832.
- [Sun et al.(1989)] N. C. Sun, D. D. Ho, C. R. Y. Sun, R.-S. Liou, W. Gordon, M. S. C. Fung, X. L. Li, R. C. Ting, T.-H. Lee, N. T. Chang, & T. W. Chang. Generation and characterization of monoclonal antibodies to the putative CD4-binding domain of human immunodeficiency virus type 1 gp120. *J. Virol.* **63**:3579–3585, 1989.
NOTE: Medline: 89342591.
- [Szilvay et al.(1992)] A. M. Szilvay, S. Nornes, I. R. Haugan, L. Olsen, V. R. Prasad, C. Endresen, S. P. Goff, & D. E. Helland. Epitope mapping of HIV-1 reverse transcriptase with monoclonal antibodies that inhibit polymerase and RNase H activities. *J. AIDS* **5**:647–657, 1992.
NOTE: Medline: 92309178. 20 MAbs are described, only five are able to bind to short peptides. These five MAbs are insensitive to mutations through out the rest of RT.
- [Tanchou et al.(1994)] V. Tanchou, T. Delaunay, H. de Rocquigny, M. Bodeus, J.-L. Darlix, B. Roques, & R. Benarous. Monoclonal antibody-mediated inhibition of RNA binding and annealing activities of HIV type 1 nucleocapsid protein. *AIDS Res. and Hum. Retroviruses* **10**:983–993, 1994.
NOTE: Medline: 95110646.
- [Tatsumi et al.(1990)] M. Tatsumi, C. Devaux, F. Kourilsky, & J. C. Chermann. Characterization of monoclonal antibodies directed against distinct conserved epitopes of human immunodeficiency virus type 1 core proteins. *Molec cell Biochem* **96**:127–136, 1990.
- [Thiriart et al.(1989)] C. Thiriart, M. Francotte, J. Cohen, C. Collignon, A. Delers, S. Kummert, C. Molitor, D. Gilles, P. Roelants, F. Van Wijnendaele, M. De Wilde, & C. Bruck. Several antigenic determinants exposed on the gp120 moiety of HIV-1 gp160 are hidden on the mature gp120. *J. Immunol.* **143**:1832–1836, 1989.
NOTE: Medline: 89381316.
- [Tilley et al.(1992)] S. A. Tilley, W. J. Honnen, M. E. Racho, T.-C. Chou, & A. Pinter. Synergistic neutralization of HIV-1 by human monoclonal antibodies against the V3 loop and the CD4-binding site of gp120. *AIDS Res. Human Retroviruses* **8**:461–467, 1992.
NOTE: Medline: 92287631.
- [Tisdale et al.(1988)] M. Tisdale, P. Ertl, B. A. Larder, D. J. M. Purifoy, G. Darby, & K. L. Powell. Characterisation of human immunodeficiency virus type 1 reverse transcriptase by using monoclonal antibodies: role of the C terminus in antibody reactivity and enzyme function. *J Virol* **62**:3662–3667, 1988.

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[Trokla et al.(1995)] A. Trokla, A. B. Pomales, H. Yuan, B. Korber, P. J. Maddon, G. P. Allaway, H. Katinger, C. F. B. III, D. R. Burton, D. D. Ho, & J. P. Moore. Cross-clade neutralization of primary isolates of human immunodeficiency virus type 1 by human monoclonal antibodies and tetrameric CD4-IgG. *J. Virol.* **69**:6609–6617, 1995.

NOTE: Three MAbs, IgG1b12, and 2G12, and 2F5 tetrameric CD4-IgG2 were tested for their ability to neutralize primary isolates from clades A-F. 2F5 and CD4-IgG2 were able to neutralize within and outside clade B with a high potency. IgG1b12 and 2G12 could potentially neutralize isolates from within clade B, but showed a reduction in efficacy outside of clade B. 2F5 neutralization was dependent on the presence of the sequence: LDKW.

[Tyler et al.(1990)] D. S. Tyler, S. D. Stanley, S. Zolla-Pazner, M. K. Gorny, P. P. Shadduck, A. J. Langlois, T. J. Matthews, D. P. Bolognesi, T. J. Palker, & K. J. Weinhold. Identification of sites within gp41 that serve as targets for antibody-dependent cellular cytotoxicity by using human monoclonal antibodies. *J. Immunol.* **145**:3276–3282, 1990.

NOTE: Medline: 91036969.

[VanCott et al.(1994)] T. C. VanCott, F. R. Bethke, V. R. Polonis, M. K. Gorny, S. Zolla-Pazner, R. R. Redfield, & D. L. Birx. Dissociation rate of antibody-gp120 binding interactions is predictive of V3-mediated neutralization of HIV-1. *J. Immunol.* **153**:449–459, 1994.

NOTE: Medline: 94267254 Using surface plasmon resonance it was found that the rate of the dissociation of the MAb-gp120 complex, but not the association rate, correlated with MAbs ability to neutralize homologous virus (measured by 50% inhibition of p24 production). Association constants were similar for all MAbs tested, varying less than 4-fold. Dissociation rate constants were quite variable, with 100-fold differences observed.

[Vella et al.(1993)] C. Vella, M. Ferguson, G. Dunn, R. Melen, H. Langedijk, D. Evans, & P. D. Minor. Characterization and primary structure of a human immunodeficiency virus type 1 (hiv-1) neutralization domain as presented by a poliovirus type 1/hiv-1 chimera. *J Gen Virol* **7**:15–21, 1993.

NOTE: This study elaborated on a set of antibodies first reported in Evans et al., 1989. Not all of the neutralization results are congruent between the studies. The antibodies in this study were raised to a region including the cytoplasmic domain of gp41 inserted into a poliovirus type 1/HIV-1 chimera.

[Warrier et al.(1994)] S. V. Warrier, A. Pinter, W. J. Honnen, M. Girard, E. Muchmore, & S. A. Tilley. A novel, glycan-dependent epitope in the V2 domain of human immunodeficiency virus type 1 gp120 is recognized by a highly potent, neutralizing chimpanzee monoclonal antibody. *J. Virol.* **68**:4636–4642, 1994.

NOTE: Medline: 94267927.

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- [Wu et al.(1995)] Z. Wu, S. C. Kayman, W. Honnen, K. Revesz, H. Chen, S. V. Warrier, S. A. Tilley, J. McKeating, C. Shotten, & A. Pinter. Characterization of neutralization epitopes in the V2 region of human immunodeficiency virus type 1 gp120: role of glycosylation in the correct folding of the V1/V2 domain. *J. Virol.* **69**:2271–2278, 1995.
NOTE: Most epitopes based only on numbering. Medline: 95191000.
- [Wyatt et al.(1992)] R. Wyatt, M. Thali, S. Tilley, A. Pinter, M. Posner, D. Ho, J. Robinson, & J. Sodroski. Relationship of the human immunodeficiency virus type 1 gp120 third variable loop to elements of the CD4 binding site. *J. Virol.* **66**:6997–7004, 1992.
NOTE: Medline: 93059644.
- [Xu et al.(1991)] J. Xu, M. K. Gorny, T. Palker, S. Karwowska, & S. Zolla-Pazner. Epitope mapping of two immunodominant domains of gp41, the transmembrane protein of human immunodeficiency virus type 1, using ten human monoclonal antibodies. *J. Virol.* **65**:4832–4838, 1991.
NOTE: Medline: 91333026.
- [Yoshiyama et al.(1994)] H. Yoshiyama, H. Mo, J. P. Moore, & D. D. Ho. Characterization of mutants of human immunodeficiency virus type 1 that have escaped neutralization by monoclonal antibody G3-4 to the gp120 V2 loop. *J. Virol.* **68**:974–978, 1994.
- [Zolla-Pazner et al.(1995)] S. Zolla-Pazner, J. O’Leary, S. Burda, M. K. Gorny, M. Kim, J. Mascola, & F. McCutchan. Serotyping of primary human immunodeficiency virus type 1 isolates from diverse geographic locations by flow cytometry. *J. Virol.* **69**:3807–3815, 1995.
NOTE: Medline: 95264474. A set of 13 human MAbs to a variety of epitopes were tested against a panel of primary isolates of HIV-1, representing different genetic clades. The V3 loop tended to be B clade restricted, and a single gp120 C terminus binding antibody was clade specific. Two other gp120 C terminus binding antibodies were group specific.